

REMARKS

Reconsideration of the instant application is respectfully requested. The present amendment is responsive to the Office Action of May 28, 2003, in which claims 1-31 are presently pending. Of those, claims 1-5, 7-11, 13-17, 19-23 and 25-30 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,114,240 to Mehdizadeh, et al. In addition, the remaining claims 6, 12, 18, 24 and 31 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mehdizadeh, in view of U.S. Patent 6,522,140 to Harvey. For the following reasons, however, it is respectfully submitted that the application is now in condition for allowance.

As an initial matter, the Examiner has stated that the title of the invention is not descriptive and has required a new title for the specification that is "clearly indicative of the invention to which the claims are directed." However, the Applicants respectfully traverse this requirement for the reason that the title "DEGENERATE BIRDCAGE RESONATOR FOR MAGNETIC RESONANCE IMAGING" is in fact descriptive and indicative of the invention to which the claims are directed. This is reflected, for example, by the preamble of claim 7, which recites a "degenerate birdcage resonator for magnetic resonance imaging".

In the alternative, the Applicants respectfully request the Examiner provide the Applicants with a suggested new title.

Figures 1 and 2 have been amended as indicated above to include the legend -- Prior Art--. Accordingly, it is respectfully requested that the objections to the drawings be withdrawn.

With regard to the claim rejections based on the art of record, the applicants respectfully traverse each of the §102 and §103 rejections for the reason that the cited art does not teach or suggest using a degenerate birdcage resonator, in conjunction with

output circuitry, to receive emitted RF energy at a plurality of resonance modes of the degenerate birdcage coil, as is provided for in each of the pending claims.

In support of the above mentioned rejections, the Examiner has cited (on page 3, paragraph 3 of the present Office Action) Figure 1, reference numeral 30 of the Mehdizadeh patent, as well as column 4, lines 3-18 thereof. However, a review of those portions of the Mehdizadeh patent reveals that Mehdizadeh does not teach receiving multiple modes of a single frequency, but rather two separate frequencies. More specifically, Mehdizadeh describes that “[t]he recombined and phase shifted signals are supplied to a receiving means 30 including a 26 MHz receiver 30a and a 64 MHz receiver 30b.” (col. 4, lines 9-12)

In contrast, the claims of the instant application recite “...said output receiving circuitry receiving said emitted RF energy at *a plurality of resonance modes* of said degenerate birdcage coil...” (emphasis added) Thus, one skilled in the art will recognize that a receiver configured for detecting two or more frequencies is not the same as detecting multiple resonance modes of a single frequency. As explained, for example, in paragraph [0029] of the specification:

“As a receiver, however, the birdcage further uses both the homogeneous and the inhomogeneous modes, all of which are detected *at the same frequency*.” (emphasis added)

Accordingly, since Mehdizadeh does not teach each and every element of the independent claims, as well as the claims dependent therefrom, there is no anticipation of the claims by that reference. Accordingly, because neither Mehdizadeh nor any of the other cited references teach using a degenerate birdcage (i.e., a single resonator with equally spaced rungs) for multiple resonance mode detection, it is respectfully requested that both the §102 and §103 rejections be withdrawn.

For the above stated reasons, it is respectfully submitted that the present application is now in condition for allowance. No new matter has been entered and no additional fees are believed to be required. However, if any fees are due with respect to this Amendment, please charge them to Deposit Account No. 07-0845 maintained by Applicants' attorneys.

Respectfully submitted,

CANTOR COLBURN LLP

By



Sean F. Sullivan

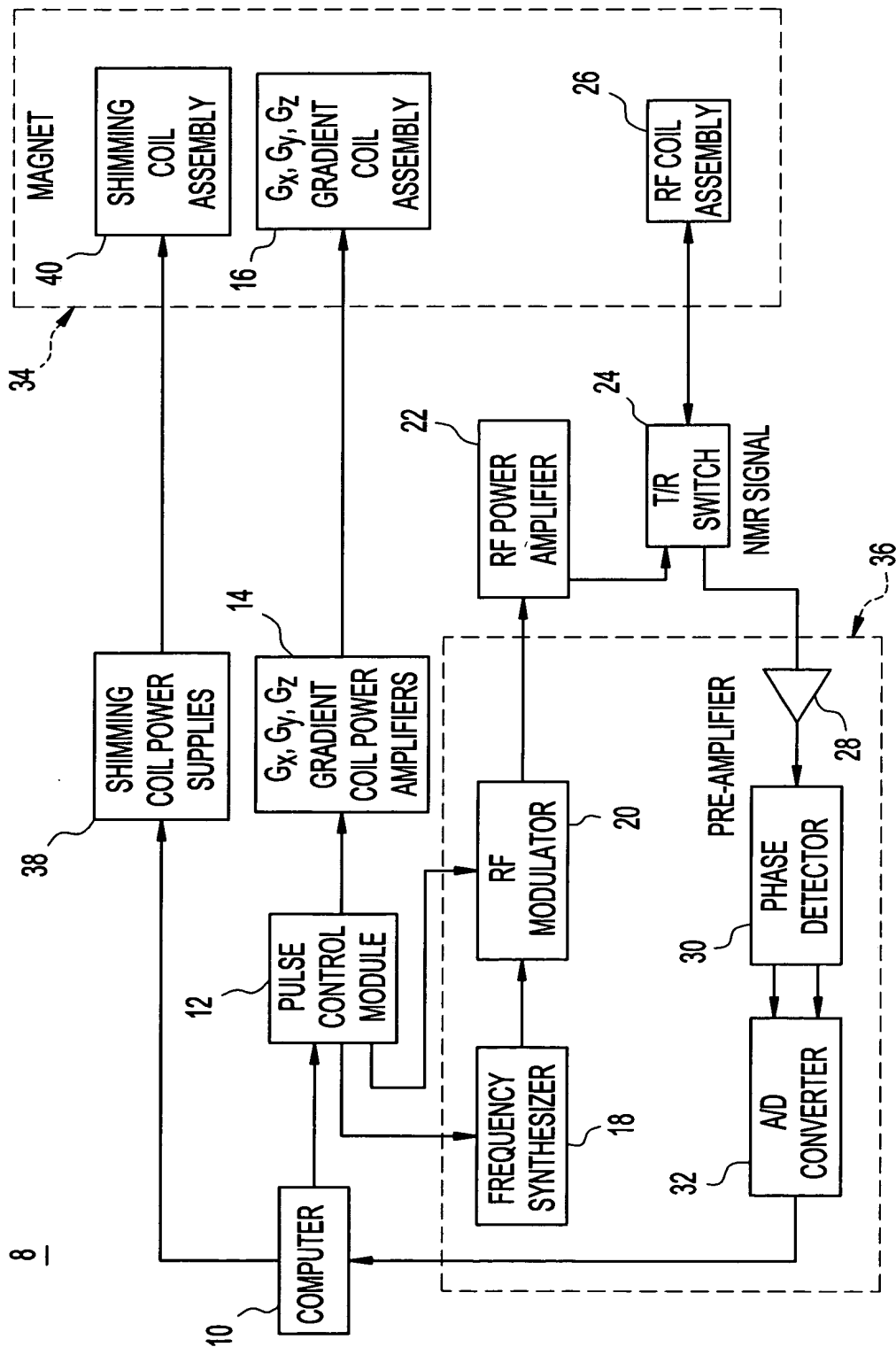
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REPLACEMENT SHEET

FIG. 1
 PRIOR ART





REPLACEMENT SHEET

FIG. 2
PRIOR ART

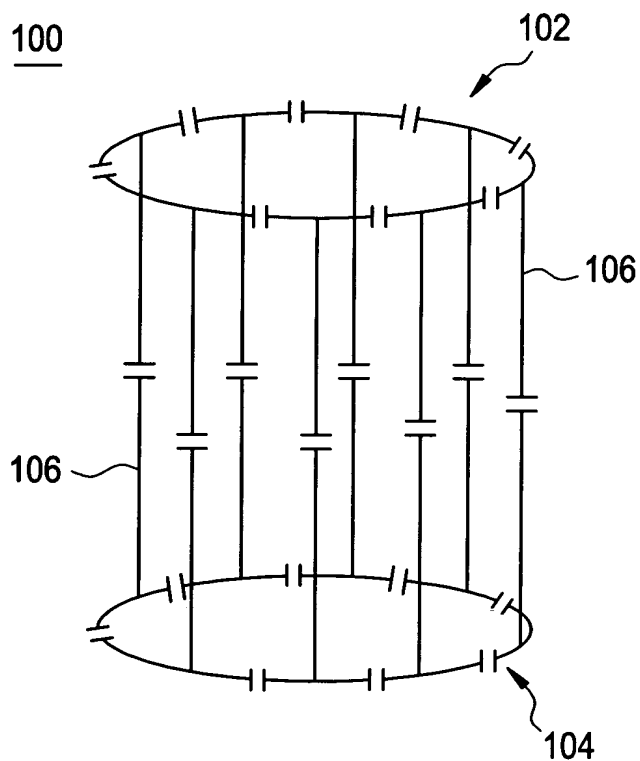




FIG. 3

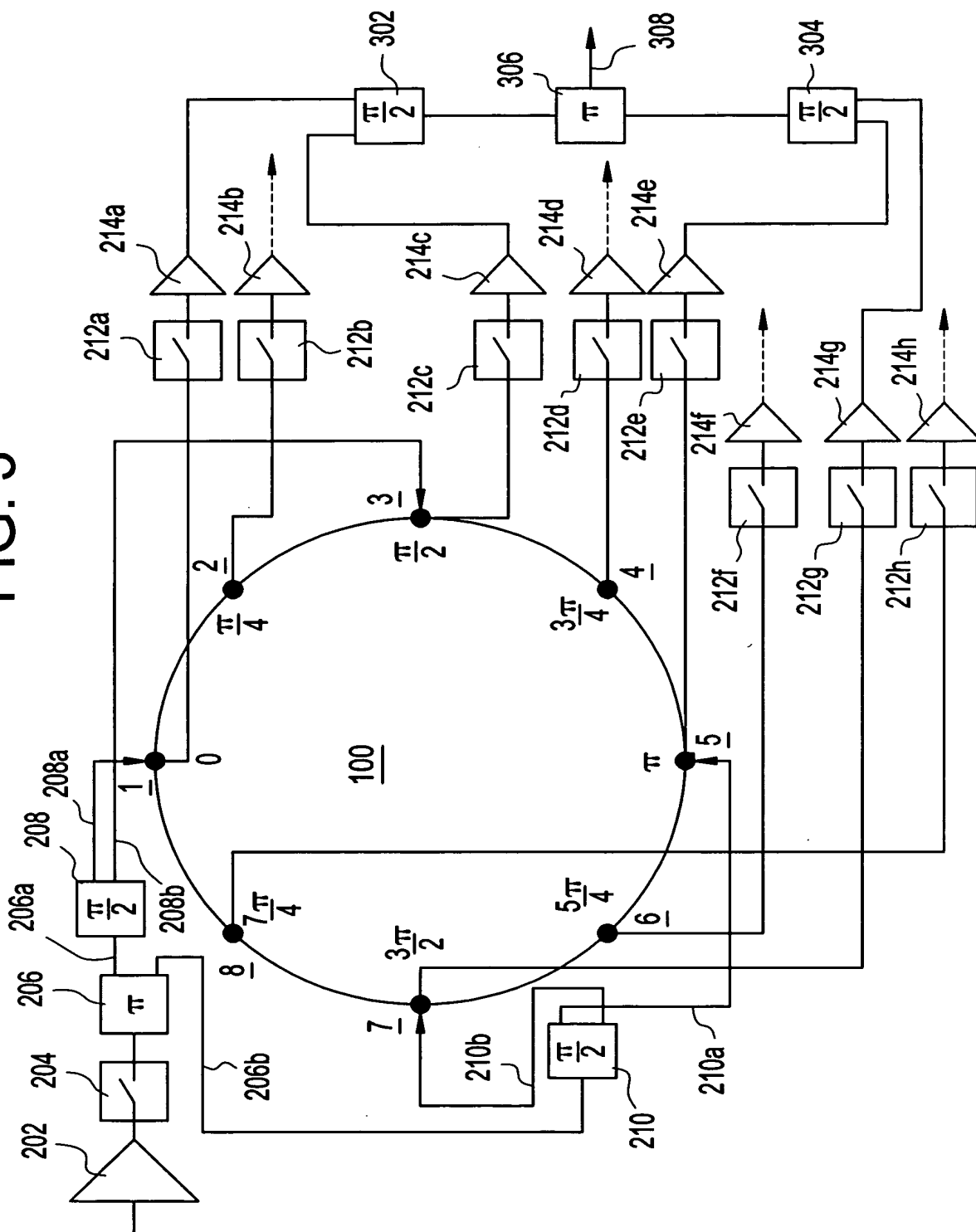


FIG. 4

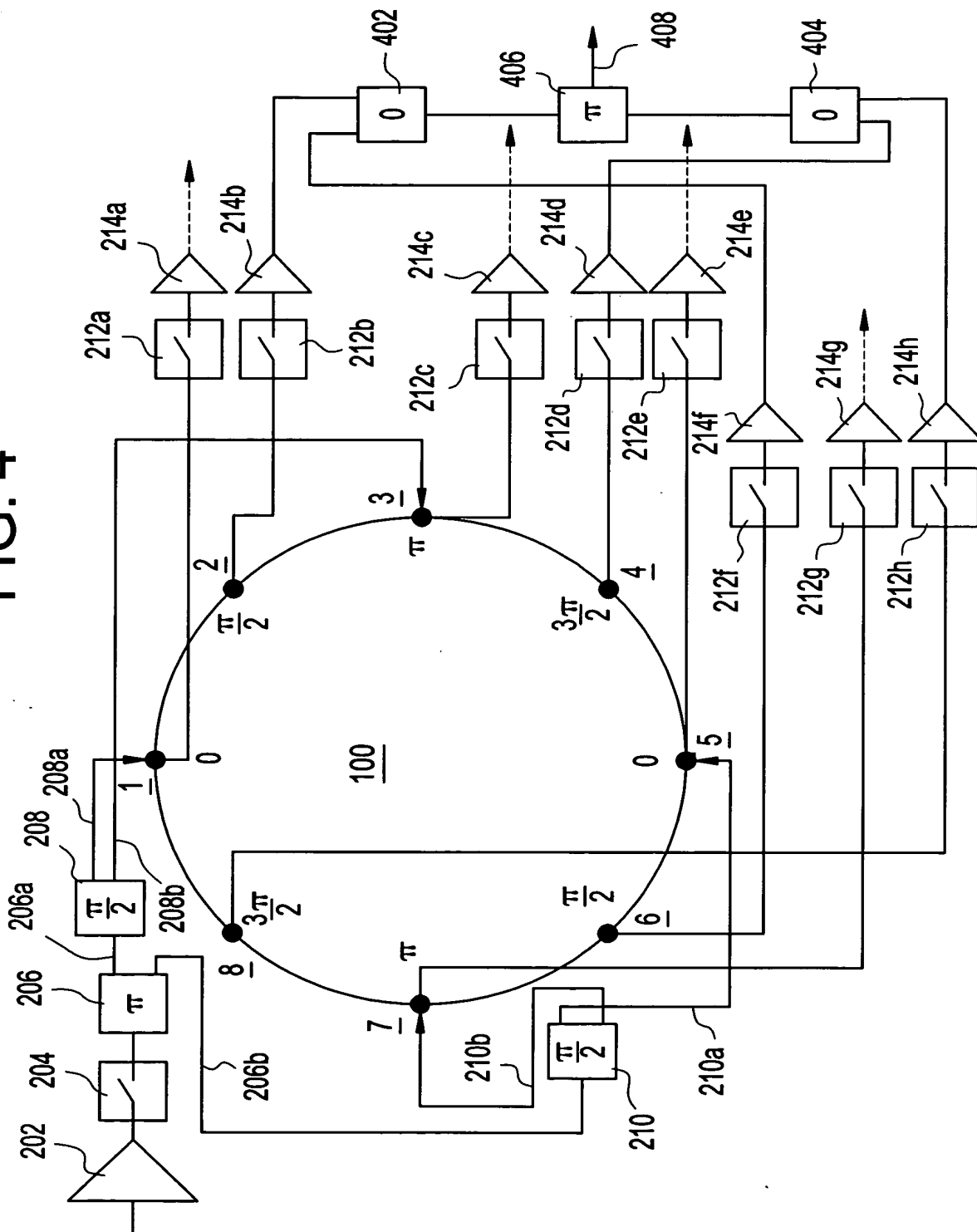




FIG. 5

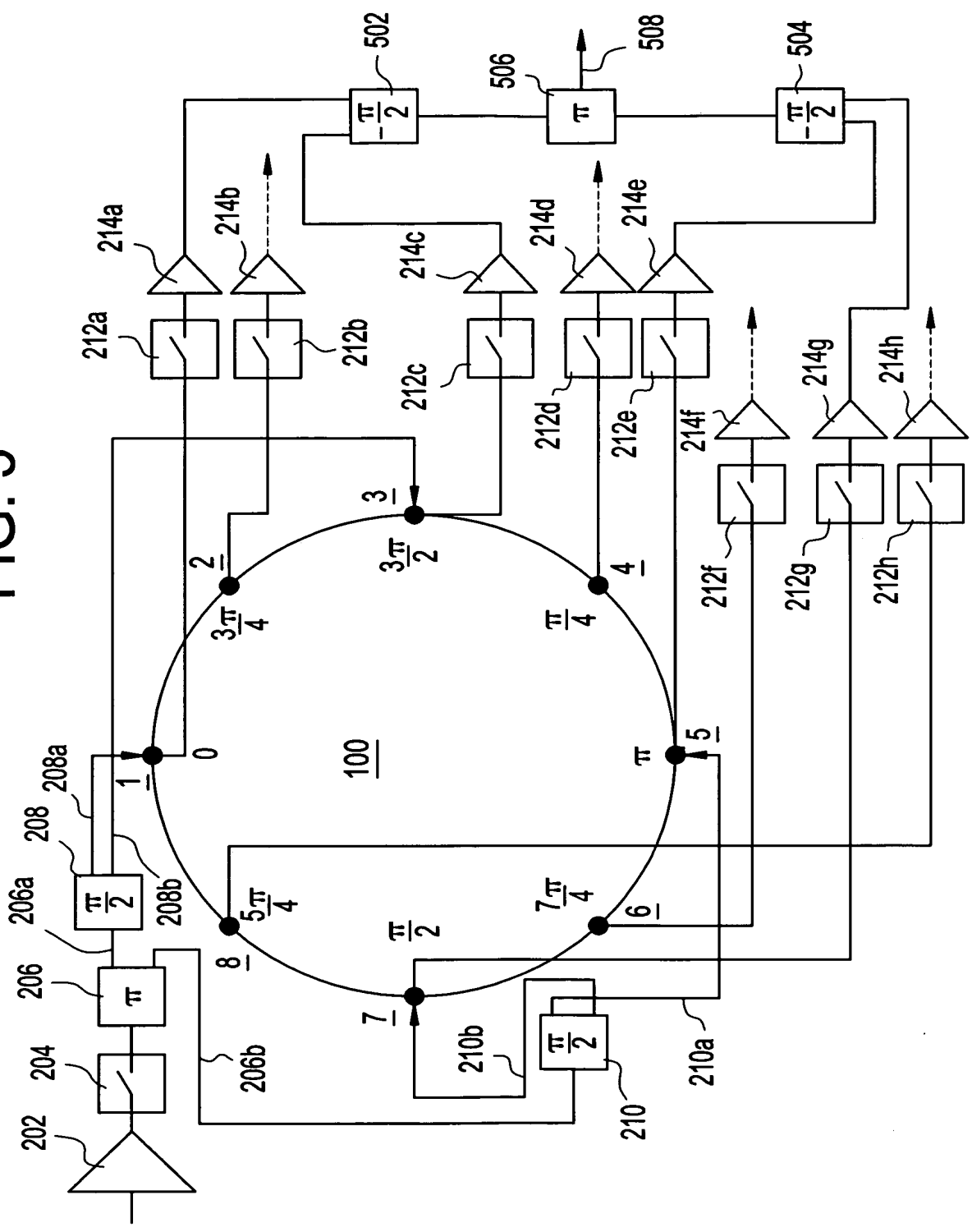




FIG. 6

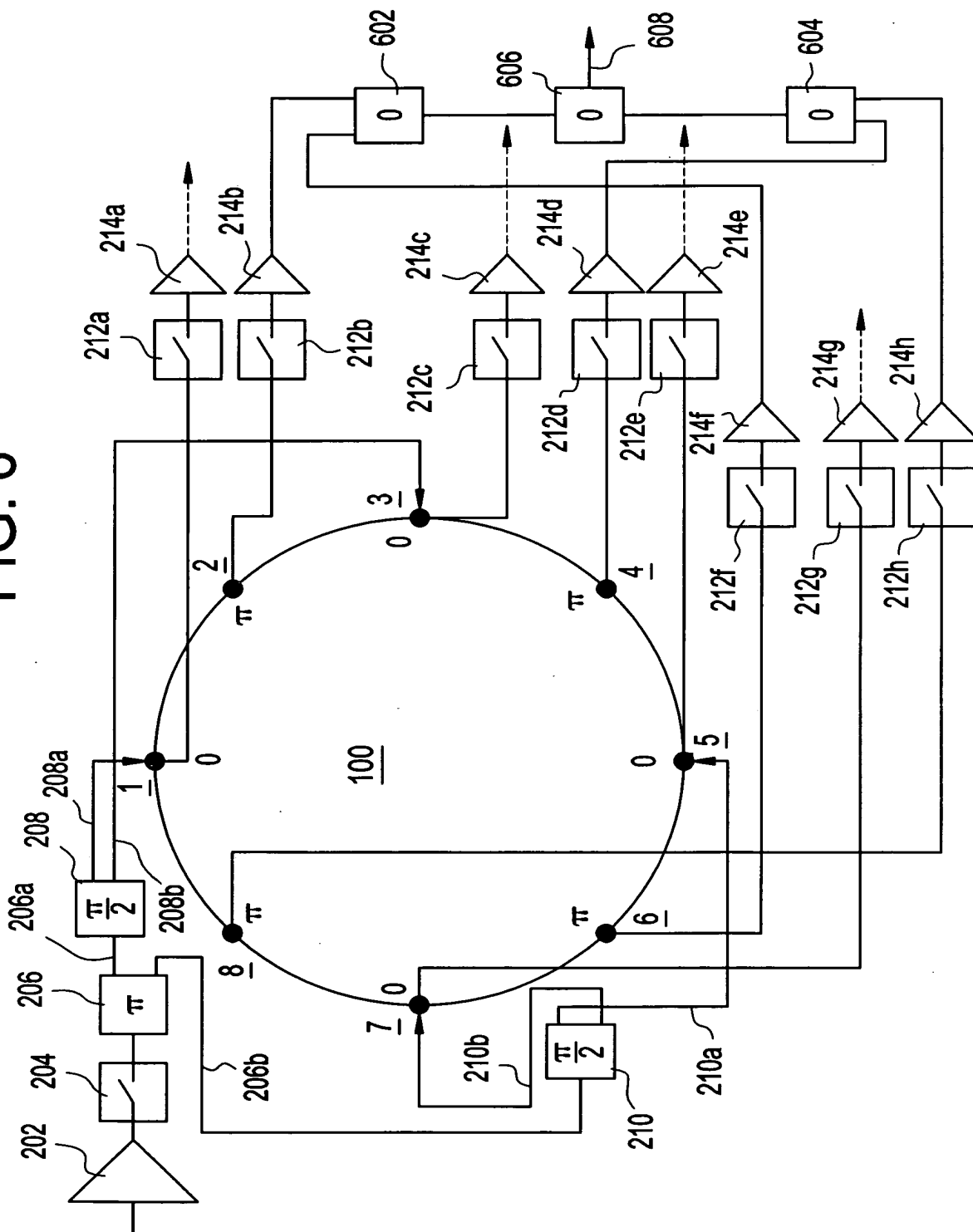


FIG. 7A

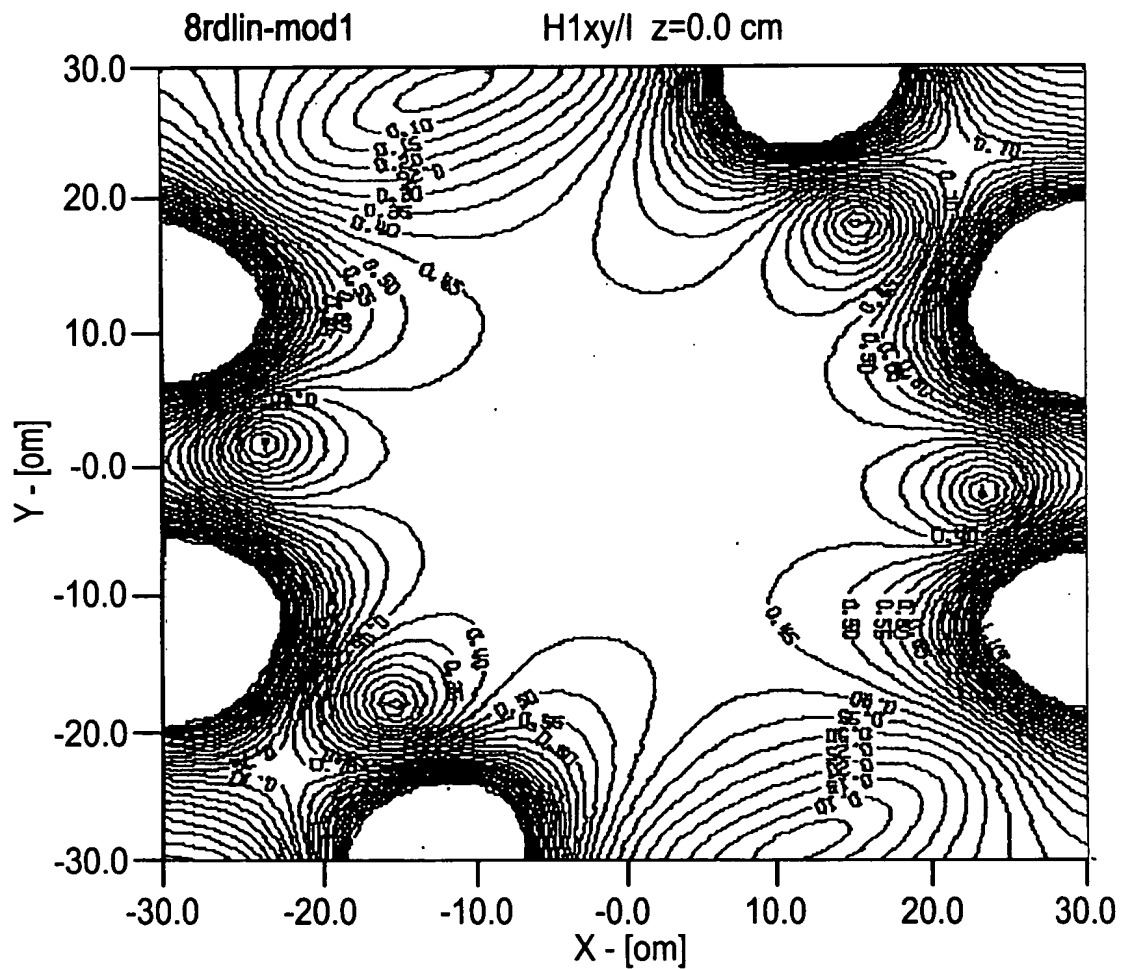




FIG. 7B

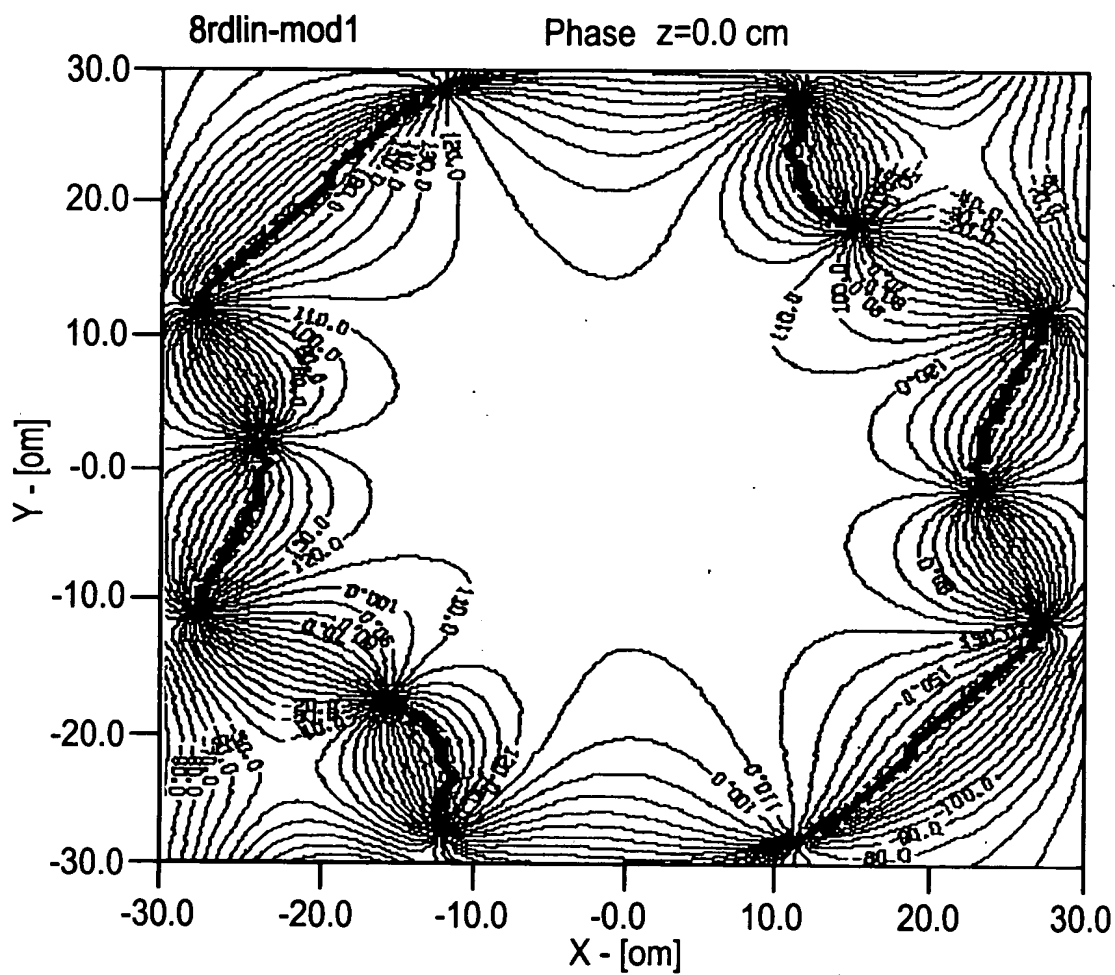




FIG. 8A

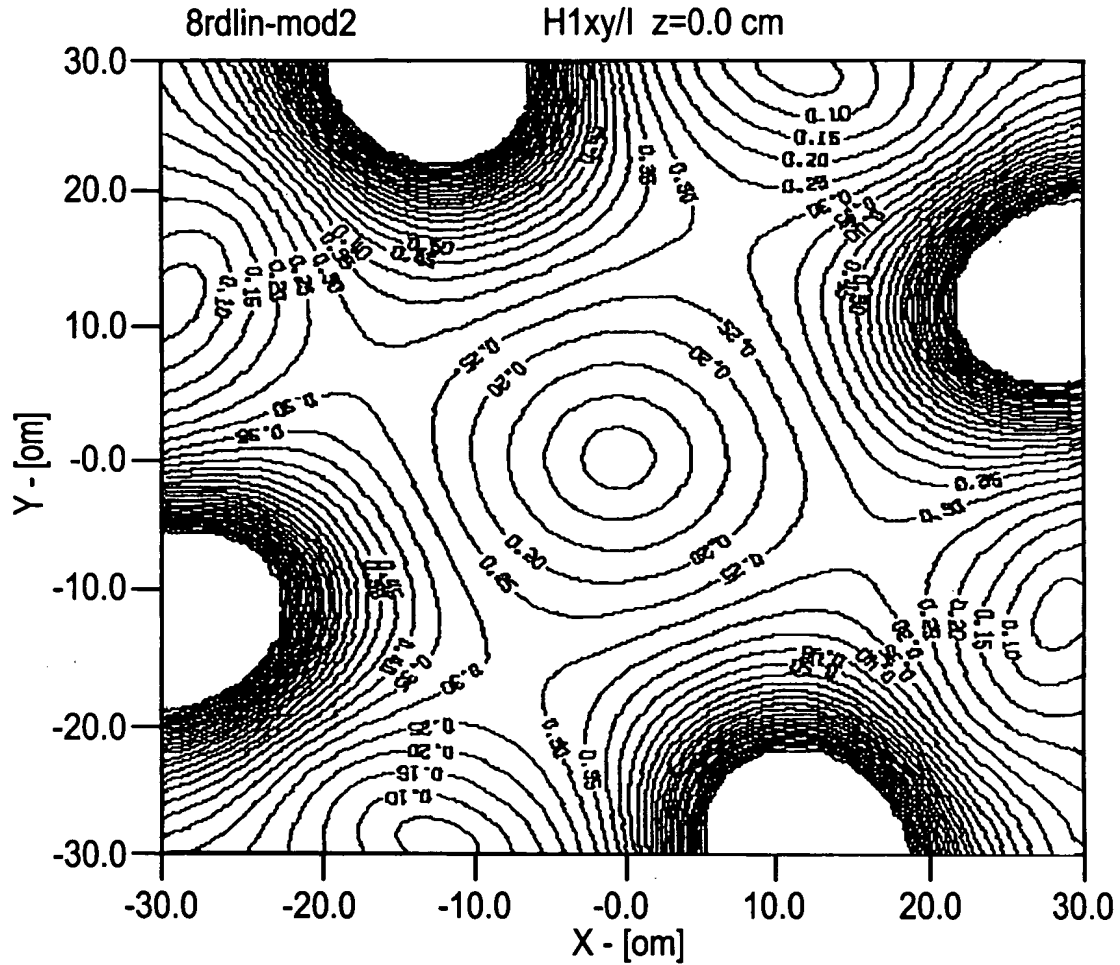
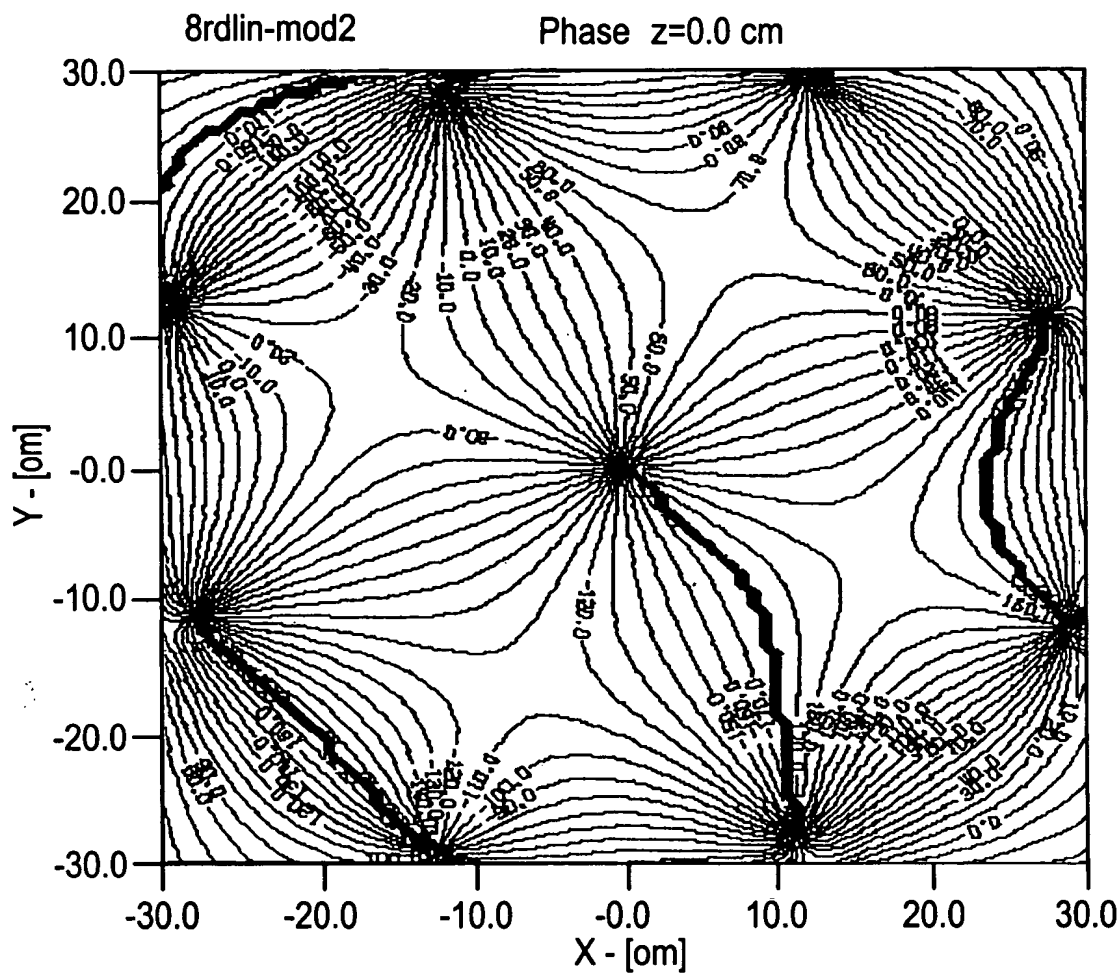




FIG. 8B



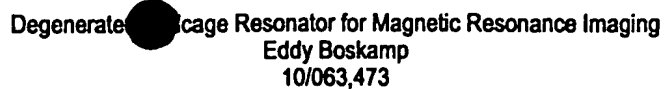




FIG. 9B

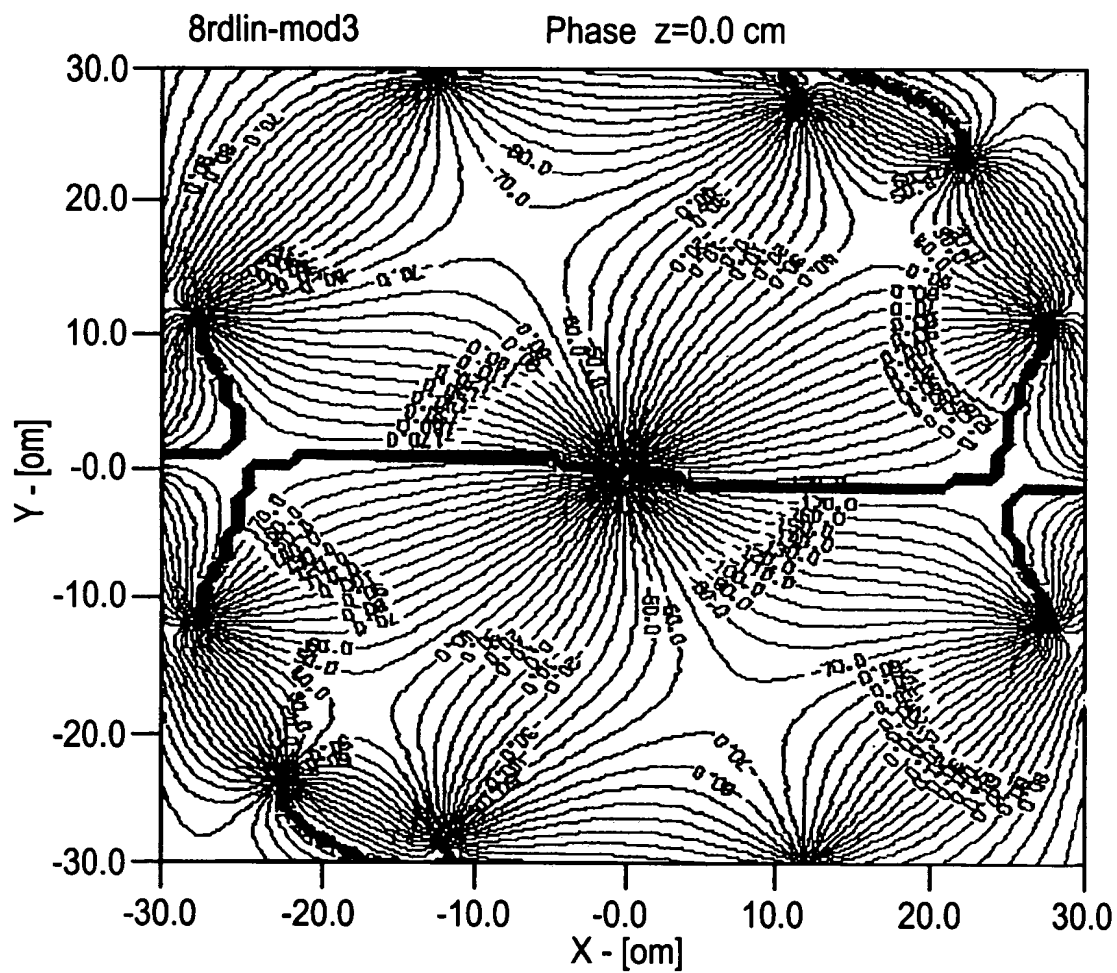




FIG. 10A

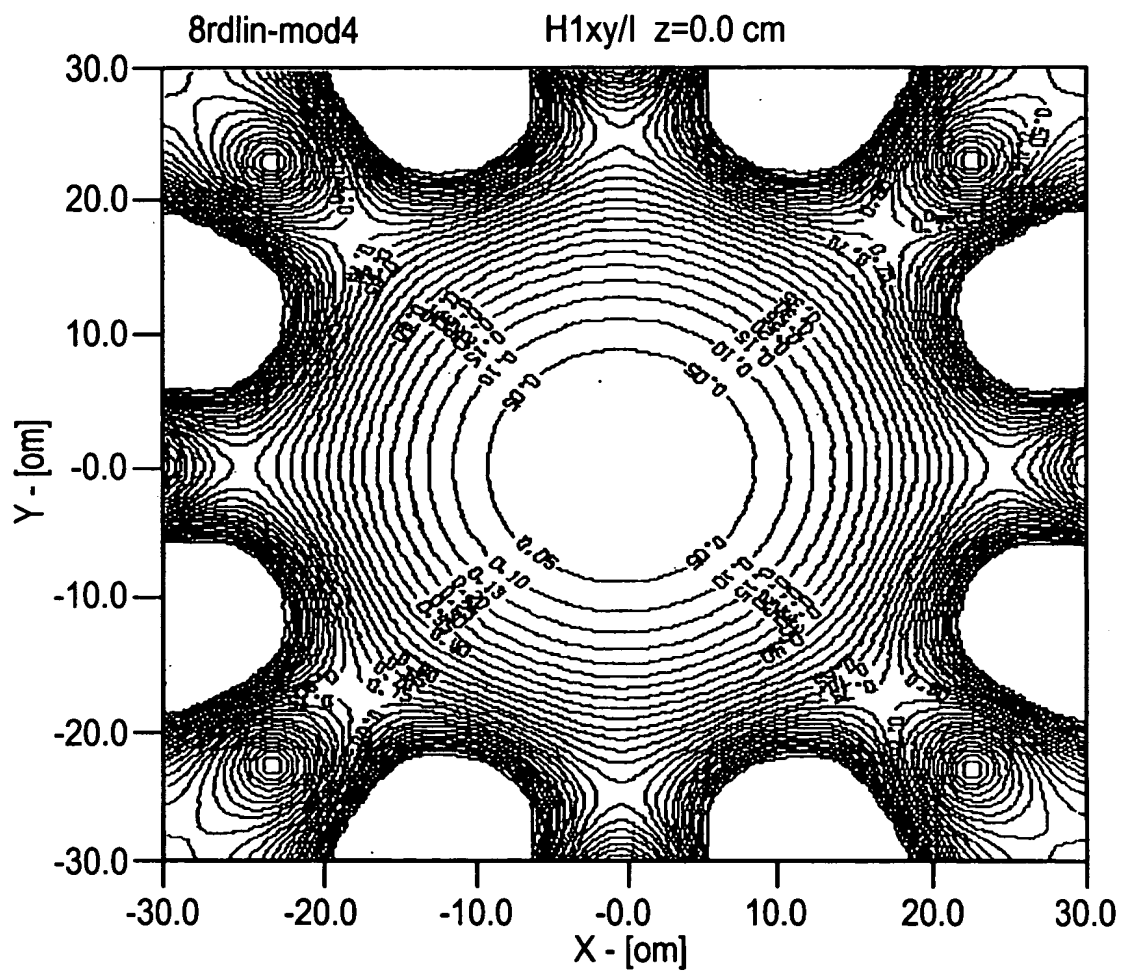




FIG. 10B

